COMBINING OPERATIONS IN A VLIW PROCESSOR

ABSTRACT

[0047]   Super functional units are used to execute not only single super-instructions that take more than one issue slot, but also a number of equivalent regular VLIW instructions. Accordingly, the same hardware can thus be used to execute either a superoperation or a combination of regular operations, potentially combined with other smaller superoperations. Using super functional units in this way promotes efficient use of computing resources by making computing resources that might otherwise be used unnecessarily by superoperations available for use by single-slot instructions or by smaller superoperations. In some embodiments, a compiler analyzes program and other data to identify superoperations that can be reduced to equivalent single-slot instructions. The compiler maps these operations to a single slot of a super functional unit, reducing the computing resources occupied by the operation.